Application No.: 09/828,225

Docket No.: 20386-00295-US

AMENDMENTS TO THE CLAIMS

1-3. (canceled)

4. (previously presented) The system of claim 24, wherein the top closed barrier wall is arranged such that the solid material flows down onto the top closed barrier wall, and wherein the top closed barrier wall is inclined so as to guide the solid material to the process chamber inlet.

5. (previously presented) The system of claim 24, wherein an outlet from a return duct of external circulation of the solid material is provided at or above the open top of the inlet chamber.

6. (canceled)

7. (previously presented) The system of claim 24, wherein the at least one process chamber and the at least one inlet chamber are arranged next to each other.

8. (previously presented) The system of claim 24, wherein each inlet chamber is arranged side by side with one process chamber so as to form at least one set of chambers.

9. (previously presented) The system of claim 24, wherein a first process chamber is provided on one side of each inlet chamber and a second process chamber is provided on another side of each inlet chamber so as to form a set of chambers, and wherein each inlet chamber is arranged to deliver solid material to the first and second process chambers.

10. (previously presented) The process chamber of claim 24, wherein one process chamber is positioned between two inlet chambers so as to form a set of chambers, and wherein the two inlet chambers are arranged to deliver solid material to the one process chamber.

11. (previously presented) The system of claim 24, wherein one process chamber is provided ~~in~~ between a first inlet chamber and a second inlet chamber so as to form a set of chambers, wherein the first inlet chamber is connected to the internal circulation of the solid material, and wherein the second inlet chamber is connected to the external circulation.

12. (previously presented) The system of claim 24, wherein:

one inlet chamber is provided between a first process chamber and a second process chamber so as to form a set of chambers;

division walls separate the first and second process chambers from the one inlet chamber, and the division walls are arranged substantially perpendicular to the at least one wall;

inlets to the first and second process chambers are provided at lower parts of the division walls;

said set of chambers includes a common front wall having a lower part and an upper part and arranged substantially parallel to the at least one wall; and

outlets of the first and second process chambers are arranged in the upper part of the front wall.

13. (previously presented) The system of claim 24, wherein:

one inlet chamber is provided between a first process chamber and a second process chamber so as to form a set of chambers;

division walls separate the first and second process chambers from the one inlet chamber, and the division walls are arranged substantially perpendicular to the at least one wall;

inlets to the first and second process chambers are provided at lower parts of the division walls;

said set of chambers includes a common front wall having a lower part and an upper part and arranged substantially parallel to the at least one wall;

outlets of the first and second process chambers are arranged in the upper part of the front wall; and

top closed barrier walls of the first and second process chambers are inclined in a manner such that the top closed barrier walls slant towards the open top of the inlet chamber.

14. (previously presented) The system of claim 24, wherein:

one inlet chamber is provided between a first process chamber and a second process chamber so as to form a set of chambers;

division walls separate the first and second process chambers from the one inlet chamber, and the division walls are arranged substantially perpendicular to the at least one wall;

inlets to the first and second process chambers are provided at lower parts of the division walls;

said set of chambers includes a common front wall having a lower part and an upper part and arranged substantially parallel to the at least one wall;

outlets of the first and second process chambers are arranged in the upper part of the front wall; and

an outlet of the external circulation of the solid material from a return duct is arranged in the at least one wall at or above the open top of the inlet chamber.

15-16. (canceled)

17. (previously presented) The system of claim 24, wherein the at least one inlet chamber is provided with a grid including means for fluidizing the interior of the at least one inlet chamber by means of a fluidizing medium fed from a windbox below the grid.

18. (previously presented) The system of claim 13, wherein the at least one inlet chamber is provided with a grid including means for fluidizing the interior of the at least one inlet chamber by means of a fluidizing medium fed from a windbox below the grid, the windbox being divided into separate sections, each of said sections having its own means for fluidizing medium feed.

19. (previously presented) The system of claim 14, wherein the at least one inlet chamber is provided with a grid including means for fluidizing the interior of the at least one inlet chamber by means of a fluidizing medium fed from a windbox below the grid, the windbox being divided into separate sections, each of said sections having its own means for fluidizing medium feed.

20. (currently amended) The system of claim 24, wherein the open ~~top~~ inlet of one or more inlet chambers among the at least one inlet chamber is provided with means for controlling the flow of the solid material into the one or more inlet chambers.

21. (currently amended) The system of claim 24, wherein the open ~~top~~ inlet of one or more inlet chambers among the at least one inlet chamber is provided with means for controlling the flow of the solid material into the one or more inlet chambers in a manner such that the top of the one or more inlet chambers is provided with a segmented area having its own fluidizing air supply means.

22. (currently amended) The system of claim 24, wherein the open ~~top~~ inlet of one or more inlet chambers among the at least one inlet chamber is provided with means for controlling the flow of the solid material into the one or more inlet chambers in a manner that the top of the one or more inlet chambers is provided with a segmented area having its own fluidizing air supply means, said fluidizing air supply means having a substantially U-shaped form in a horizontal section and comprising a U-shaped tube system forming the air supply placed inside a U-shaped groove at the top of the one or more inlet chambers, said tube system together with the groove reaching adjacent to both side walls and adjacent to a front wall of the one or more inlet chambers, wherein the groove opens upwards and the direction of fluidizing air is selected in a manner, that when the segmented area is fluidized, solid material from an internal circulation IC coming down the top closed barrier wall of the at least one process chamber towards the top of the one or more inlet chambers is forced to enter the furnace.

23. (previously presented) The system of claim 8, wherein said at least one set of chambers comprises two sets of chambers provided side by side adjacent to the rear wall of the reactor furnace, wherein a particle separator system in connection with the external circulation of solid material is divided to feed the flow of solid material to said two sets of chambers.

24. (currently amended) A system including at least one process chamber in connection with a fluidized bed reactor for utilizing, for heat transfer purposes, internal circulation or external circulation of solid material, or both internal circulation and external circulation of the solid material, wherein the at least one process chamber comprises:

an interior limited by side walls having a lower part and an upper part, wherein the interior enables a flow of the solid material;

heat exchanger means provided within said interior for heat transfer from the flow of the solid material to a heat transfer medium inside the heat exchanger means;

a top closed barrier wall forming a roof of the at least one process chamber;

a process chamber inlet for carrying the solid material into the at least one process chamber, wherein the process chamber inlet is arranged in the lower part of one of the side walls; and

a process chamber outlet for carrying the solid material out of the at least one process chamber, wherein the process chamber outlet is arranged in the upper part of one of the side walls; and

wherein the fluidized bed reactor comprises:

a furnace and furnace walls limiting the furnace, wherein the at least one process chamber is located inside the furnace of the fluidized bed reactor adjacent to at least one wall of the furnace walls; and

at least one inlet chamber <u>located inside the furnace adjacent to at least one wall of the furnace walls</u> for directing the solid material to the process chamber inlet, wherein the at least one inlet chamber is disposed prior to the process chamber in the direction of the flow of the solid material,

wherein the at least one inlet chamber extends in a vertical direction and ends in an open inlet which is open in the horizontal direction and located at the top of the inlet chamber ~~open top~~ inside the furnace, wherein the open ~~top is arranged to receive the flow of solid material~~ inlet allows particles of the solid material to freely enter the inlet chamber.

25. (previously presented) The system of claim 24, wherein the at least one process chamber and the at least one inlet chamber have a rear wall that is formed by the at least one wall of the furnace.

26. (previously presented) The system of claim 9, wherein the one inlet chamber and the first and second process chambers have a rear wall that is formed by the at least one wall of the furnace.